

REMARKS

Claims 1 and 3-18 are pending in this application.

Claims 3 and 5 have been allowed.

Claims 8-11 and 18 have been indicated as containing allowable subject matter. It is noted that claim 12 should also be included in the claims containing allowable subject matter since claim 12 depends directly from claim 11 which contains allowable subject matter.

Claims 1, 4, 6-7 and 13-15 stand rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 3,340,597 to Stein et al. (hereinafter referred to as "Stein").

Claims 12 (sic) and 16-17 stand rejected under 35 U.S.C. §103(a) as being obvious over Stein in view of Applicant's disclosure of the prior art.

The present invention deals with placing a bonded metal layer of low thermal conductivity in the core of a drawn composite multilayered cooking vessel (drawn cookware). The layer of lower conductive metal creates a thermal barrier in the composite cross-section to cause heat flow radially outward (rather than directly transversely through the cross-section) and, thus, prevents localized hot spots in the cook surface in the areas directly above the heating elements of an electric range or the flames of a gas burner. Hence, a more uniform temperature is achieved across the cook surface of the cookware. The construction of the invention is directly contrary to the prior art cookware which typically utilizes a layer of higher thermal conductivity metal, such as aluminum or copper, in the core of the vessel. Stein does, indeed, teach the roll bonding of aluminum and stainless steel in differing configurations for a variety of purposes or end uses, such as, for example: "...cooking utensils, automotive trim, food processing equipment, storage tanks, and highway tanks and trailers." See col. 2, lines 34-36.

Stein specifically teaches, at col. 2, lines 37-41, with respect to cookware: "In connection with cooking utensils, such as pans, it (stainless steel bonded aluminum) permits employing the stainless steel on the cooking side of the vessel, while simultaneously allowing utilization of the heat transmission qualities of the aluminum on the heating or fore side of the pan."

Stein then discloses: "Where the composite is employed in transportation equipment and the like, an important weight savings is achieved by reason of the low density of the aluminum, coupled with the economics resulting from savings of costly stainless steel." See col. 2, lines 42-45.

Stein then goes on to state at col. 2, lines 46-50: "In accordance with the invention, the aluminum or aluminum base alloy may be clad on one or both sides with stainless steel. Or the aluminum may form the center of a sandwich between two layers of stainless steel, if desired." In essence, both of these proposed constructions of Stein are the same, i.e., a composite having aluminum in the core and stainless steel forming the outside layers, the direct opposite of the present invention.

Stein does state, however, at col. 1, lines 16-20: "There has long existed a need for a dependable and economical process of preparing aluminum sheet clad on one or both sides with stainless steel or, conversely, of stainless steel sheet clad on both sides with aluminum or aluminum alloy sheet."

What does the above-quoted passage mean to those of ordinary skill in the art? The first disclosed composite comprising aluminum sheet clad on one or both sides with stainless steel could relate to a number of known uses including the manufacture of cookware, because of the widespread understanding about the desirability of using high thermal conductivity aluminum in the core of the composite and placing stainless steel on the cook surface and on the outside for its chemical inertness and hard/scratch-resistant properties. The second composite disclosed by Stein in the above-quoted passage, i.e., a stainless steel sheet clad on both sides with aluminum or aluminum alloy sheet, reasonably relates to automotive trim, highway tankers and the like where weight savings, strength and corrosion resistance are important factors. There was clearly no "long felt need" for a stainless steel core cookware at the time of the Stein invention because the prior art is completely void of any such construction prior to Stein and in the ensuing 35 years since the Stein patent. Indeed, Stein does not mention a stainless steel core composite as a possible cookware material. It remains a fact that no one skilled in the art prior to the instant invention has made a composite sheet for drawn cookware comprising a stainless steel core, roll bonded directly to aluminum layers on its two surfaces. This construction runs directly counter to the conventional cookware design practices.

The balance of the Stein patent confirms these conclusions, particularly when the Examples 1-5 are read and understood for their specific teachings, taken with the state of the art.

Example 1 of Stein starts with two rectangular 4"x8" size pieces of 3003 aluminum alloy sheet and 304 stainless steel sheet. The two pieces are roll bonded at a 20% cold reduction for the stainless sheet. No specific end use for the composite is specified.

Example 2 of Stein discloses the roll bonding of two 12"x12" square sheets of 3003 aluminum alloy and 304 stainless steel with a 13% reduction in the stainless steel. The bonded composite is then drawn to form a cooking pan.

Example 3 of Stein discloses the roll bonding of three 12"x12" square sheets wherein a sheet of 1100 aluminum is roll bonded between two sheets of 304 stainless steel. The stainless steel was subjected to 6% reduction during rolling. The roll bonded composite was then drawn into a cooking pan.

Example 4 of Stein discloses the roll bonding of 3 pieces of 4"x8" rectangular metal sheets. A type 304 stainless steel sheet was roll bonded between two sheets of 3004 aluminum alloy with a 3A aluminum cladding. The aluminum sheets were heated to 900°F prior to rolling while the stainless steel was at room temperature. The stainless steel was reduced 21% during roll bonding. No specific end use is specified, although based on the 4"x8" sheet size and high rolling reduction, it was clearly not intended for drawing into a cooking pan.

Example 5 of Stein discloses the roll bonding of a 5"x8" rectangular sheet of 304 stainless steel to 3004 aluminum alloy wrapped with 99.9% pure aluminum foil. No specific end use is specified.

In making the present rejections, the Examiner relies upon Example 4 of Stein and then cites various other passages of Stein to allegedly piece together the anticipation rejection under 35 U.S.C. §102(b). The rejection is improper because Example 4 of Stein is clearly not directed to the manufacture of cookware. In addition, the Examiner erroneously compares the "heating temperature step" of Stein at 500-975°F (col. 3, lines 34-46) to Applicant's claimed heating step to a rolling temperature (claim 6). The Stein patent at col. 3, line 34 specifically teaches that this heating step occurs "Following the preliminary bonding step...", i.e., after rolling. Applicant's claimed heating of the entire composite occurs prior to rolling. In addition, it is also noted that Stein only heats the aluminum sheets, while the stainless steel remains cold at room temperature, prior to roll bonding, see col. 5, lines 15-16 for Example 4.

The Examiner correctly states that Example 4 of Stein "discloses a multilayered composite sheet made from a plurality of roll bonded layers including an inner layer of a lower coefficient of thermal conductivity material (304 type stainless steel) between layers of higher coefficient of thermal conductivity materials (e.g., aluminum). The Examiner

then erroneously states that this composite sheet (of Example 4) is "useful for making cooking utensils (e.g. see column 2, lines 33-34)."

Applicant submits that the Examiner's above-quoted conclusion is unsupported by Stein. Stein specifically discloses at col. 2, lines 37-41 that in connection with cooking utensils, such as pans, the stainless steel layer should be on the cooking side of the vessel, namely, forming the cooking surface. Indeed, Examples 2 and 3 of Stein, which specifically disclose the manufacture of a drawn pan for cooking, both have stainless steel forming the cooking surface.

The composite of Example 4 of Stein has layers of aluminum on both of its outside surfaces. This composite construction of Example 4 does not possess a stainless steel surface, thus, it does not meet Stein's express criteria for cookware. In addition, and as more fully discussed in the attached Declaration of William Groll, the named inventor herein, Example 4 of Stein is clearly not intended, nor is it suitable, for the manufacture of cookware.

As Mr. Groll states in Paragraph No. 4 of the Declaration, Stein's Examples 1-5 lead one skilled in the art to the conclusion that only Examples 2 and 3 are intended for the manufacture of drawn cookware. This is based on several factors, including the composite sheet size, wherein the cookware of Examples 2 and 3 employ square sheets measuring 12"x12" while Example 4, the non-cookware example, employs a rectangular composite sheet measuring 4"x8" which would not be suitable for subsequent drawing into of a cooking pan, see Paragraph 4(a) of the Declaration. Further, as pointed out in Paragraph No. 4(b) in Mr. Groll's Declaration, the high rolling reduction (21%) in the composite sheet of Stein's Example 4 leads him to conclude that it is not suitable for subsequent drawing because the additional deformation caused by drawing would cause the stainless steel to rupture.

Mr. Groll also notes in Paragraphs 5 and 6 of his Declaration that the composite of Example 4 does not meet the cookware construction specified by Stein at col. 2, lines 37-41, wherein a stainless steel layer should be positioned on the cooking side.

Finally, Mr. Groll notes in Paragraph No. 7 of his Declaration that Stein discloses at col. 2, line 34-36 uses, in addition to cookware, for his aluminum-stainless steel composites such as automotive trim, highway tankers, etc., so as to achieve important weight savings and cost savings by virtue of using less of the costly stainless steel. Clearly, according to Mr. Groll, the composite of Example 4 of Stein is intended for one of these enumerated uses other than cookware. Mr. Groll also notes that Stein nowhere discloses or

fairly suggests the concept of the present invention, namely, to employ a metal of lower thermal conductivity between immediately-adjacent layers of higher thermal conductivity in cookware so as to create a thermal barrier layer within the interior of the cookware, whereby heat flows in a direction parallel to the cook surface to provide uniform heating across the cook surface of the cookware. The inventive concept of employing a thermal barrier layer in cookware is totally absent from Stein.

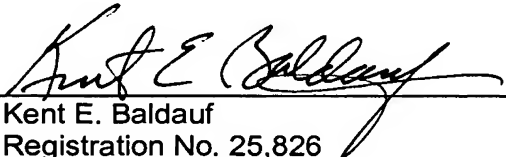
In conclusion, it is submitted that it is improper hindsight reconstruction to attribute to the composite of Example 4 of Stein a utility as drawn cookware. Prior to and subsequent to Stein, it has been commonplace to have two and three-ply cookware having stainless steel on the cook surface and aluminum on the outside, as in Example 2 of Stein and having an aluminum core sandwiched between layers of stainless steel as in Example 3 of Stein. In the ensuing 35 plus years since the issuance of the Stein patent (Reynolds Aluminum Company), no one prior to Applicant has conceived of Applicant's claimed invention. Such a delay represents evidence that Example 4 of Stein does not convey to persons skilled in the art that the composite disclosed therein is suitable for cookware.

Stein's clear disclosure that stainless steel should be on the cook surface, the rectangular shape of the composite sheet, the high degree of reduction of the stainless steel, the specific cooking pans made in Examples 2 and 3 all lead to the rational conclusion the composite of Example 4 of Stein is not intended for use as cookware but, rather, for one of the other applications disclosed by Stein.

The Examiner's reconsideration is respectfully requested and a favorable Action regarding claims 1 and 3-18 is solicited.

Respectfully submitted,

WEBB ZIESENHEIM LOGSDON
ORKIN & HANSON, P.C.

By 
Kent E. Baldauf
Registration No. 25,826
Attorney for Applicant
700 Koppers Building
436 Seventh Avenue
Pittsburgh, Pennsylvania 15219-1818
Telephone: 412-471-8815
Facsimile: 412-471-4094